DETAILED ACTION

Status of Claims

1. This Office Action is in response to the Preliminary Amendment filed on 08/28/2006. Claims 21-41 are pending.

Drawings

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the sheets of drawings should be **numbered in consecutive Arabic numerals**, starting with 1, within the sight as defined in paragraph (g) of this section. These numbers, if present, **must be placed in the middle of the top of the sheet**, but not in the margin. The numbers can be placed on the right-hand side if the drawing extends too close to the middle of the top edge of the usable surface. The drawing sheet numbering must be clear and larger than the numbers used as reference characters to avoid confusion. The number of each sheet should be shown by two Arabic numerals placed on either side of an oblique line, with the first being the sheet number and the second being the total number of sheets of drawings, with no other marking. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 36 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 36 cites "a mobile object having no RFID tag…of an RFID device as claimed in claim 21" is rendered indefinite because the mobile object is defined of not having an RFID tag and then the claim further states the RFID tag of Claim 21 and thus the claim within itself creates such ambiguity it is unable to determine whether if the tag of Claim 21 or if the mobile object is inclusive or not inclusive in the claim. Therefore, it is suggested to amend the claim to correct this ambiguity in a manner that is comprehensible to the intended claimed subject matter.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 21,23,24, 27-30,32,36,40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duron (US Patent #7339481) in view of Fischer (US Patent #7151436).

Claim 21: Duron teaches an RFID tag device comprising a divided micro strip antenna (Fig 3, 210), and a local oscillator circuit for generating a response subcarrier signal (215, Col 4 lines 50-57). Whitesmith further discloses a power receiving circuit based on a resonant based impedance rectifying scheme (Col 4 lines 15-25, Col 5 lines 1-5 e.g. bridge rectifier, impedance adder 222) but does not specifically disclose a power receiving circuit based on a combination of a stub resonance-based, impedance transformation RF boosting scheme and a ladder boosting/rectifying scheme.

Fischer teaches a multi stage power receiving circuit based on a combination of a stub resonance-based, impedance transformation RF boosting scheme and a ladder boosting/rectifying scheme (Fig 5; Col 11 lines 12-40).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of invention taught by Fischer within the system of Duron in order to use an multi stage power receiving circuit for the purpose of providing an efficient shift keying process of the signal while smoothing the output voltage of the rectified signal.

Claim 23: Duron and Fischer teach a modulation scheme of which a passive QPSK modulation method is usable (Col 4 lines 50-66 e.g. frequency divider of a sort can create quadrature phase shift keying).

Claim 24: Duron and Fischer teach wherein impedance modulation elements of the

divided micro strip antenna are respectively connected to opposite ends in a strip conductor width direction so as to connect divided conductors (Fischer Col 6 lines 64-67, Col 7 lines 1-5, 35-45).

Claim 27: Duron and Fischer teach wherein a capacitance of 1 pF/GHz or less is used for connecting the power receiving circuit and an antenna feeding point to perform high-impedance capacitive feeding (Col 6 lines 45-50 e.g. C2).

Claim 28: Duron and Fischer teach wherein capacitive load impedances in a stub resonator and a ladder boost rectifier circuit of the power receiving circuit are parallel resonant, and further, the capacitive feeding impedance are series resonant (Fig 5).

Claim 29: Duron and Fischer teach wherein when considering longitudinal connections of capacitors in the ladder boost rectifier circuit of the power receiving circuit as GND- and receiving-side rails, capacitor capacitance of the receiving-side rail is smaller than that of the GND-side rail, a first diode between GND and a receiving point is eliminated, and a high-frequency and high-impedance input is receivable by a DC short (Col 5 lines 25-34).

Claim 30: Duron and Fischer teach wherein a logic circuit including a 1/4 frequency divider, a shift register and a data selector are used in the passive QPSK modulation method (Col 4 lines 50-55, Col 5 lines 10-15).

Claim 31: Duron and Fischer teach wherein MPSK modulation is applied by using a I/M frequency divider, an M-stage shift register and an M-input data selector (Col 4 lines 50-55, Col 5 lines 10-15).

Claim 32: Duron and Fischer teach wherein response information including a tag ID code, etc. is recorded to a memory in units of two bits in accordance with the passive QPSK

modulation method (Col 4 lines 39-50).

Claim 36: Duron and Fischer teaches a position detecting method for a mobile object having no RFID tag, wherein in a system composed of an RFID device as claimed in claim 21 and one master interrogator (Fig 1, 102).

Claim 40: (new) Duron and Fischer teach two or more tag antennas in order to expand its possible communication range (Fig 2, 207).

Claim 41: Duron and Fischer teach wherein an RFID tag device as claimed in claim 40 periodically changes directionality of an intense response subcarrier radio wave, which is synthesized by periodically changing a phase of a local oscillating signal provided to each tag antenna for generating a response subcarrier signal, thereby returning an intense response radio wave toward an interrogator in a wide area (Col 6 lines 15-35).

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duron in view of Fischer and further in view of Terakawa (US Patent #3761934).

Claim 22: Duron and Fischer teaches a divided micro strip antenna but does not specifically disclose wherein a dividing position of the divided micro strip antenna is slightly deviated from a longitudinal center point across strip conductors by at least 5% or more with respect to the length.

Terakawa teaches the process of deviating from a longitudinal center point of conductors by at least 5% (Col 15-40).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of invention taught by Terakawa within the system of Duron and Fischer in order to use an

deviation from a longitudinal center point for the purpose of obtaining gain efficiency of the desired bands of frequency.

9. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duron in view of Fischer and further in view of Smith (US Patent #6236314).

Claim 25: Duron and Fischer teach the use of diodes but do not specifically disclose wherein the impedance modulation elements are PIN diodes or varactor diodes.

10. Smith teaches the using impedance modulation elements as PIN diodes (Col 5 lines 40-55).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of invention taught by Smith within the system of Duron and Fischer in order to use PIN diodes for the purpose of reducing re-radiation of the backscatter signal.

Claim 26: Duron, Fischer and Smith teach wherein the impedance modulation elements constitute a voltage or current controlled three-terminal element using a transistor, rather than a diode (Fischer Col 9 lines 10-16).

11. Claim 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duron in view of Fischer and further in view of Atkins (US Patent #6784787).

Claim 33: Duron and Fischer teach an oscillator circuit outputting a desired frequency signal and a modulator for employing a variety of modulation schemes but do not specifically disclose an output timing generator circuit for obtaining an output enable signal in the passive QPSK modulation method.

Atkins teaches an output timing generator circuit for obtaining an output enable signal in the passive QPSK modulation method (Col 4 lines 45-50).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of invention taught by Atkins within the system of Duron and Fischer in order to use a time generator for the purpose of synchronizing the input signal with the output signal of the QPSK modulation.

Claim 34: Duron, Fischer and Atkins teach wherein the output timing generator circuit generates a train of pulses with a random delay time having a fixed width and a fixed frame cycle, based on a source voltage size and a clock signal (Col 4lines 55-62).

12. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duron in view of Fischer and further in view of Dinger (US Patent #4537515).

Claim 35: Duron and Fischer teach the use of a local oscillator but do not specifically disclose wherein by using a transducer such as a temperature sensor quartz resonator as the local oscillator circuit for generating the response subcarrier signal.

Dinger teaches the process of using a temperature sensor quartz resonator (Col 5 lines 10-40).Therefore, it would have been obvious to one ordinarily skilled in the art at the time of invention taught by Dinger within the system of Duron and Fischer in order to use a temperature sensor quartz resonator for the purpose of compensating for temperature variances that is common during transmission of signals.

13. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duron

in view of Fischer and further in view of Chieu (US Patent #5995019).

Claim 36: Duron and Fischer further discloses the tag overcoming frequency barriers of a device based on the environment by using components used in Claim 21 (e.g. 222 impedance adder) and modulation of a plurality of frequencies but do not specifically disclose one or more master devices (interrogators), whether or not an obstacle is present in a radio wave propagation path extending between each RFID tag device and each interrogator is determined based on the presence or absence of communication between the RFID tag and the interrogator.

Chieu teaches the process of determining whether communication is possible between a RFID tag and an interrogator in the propagation path (Col 5 lines 25-35, 42-52).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of invention taught by Chieu within the system of Duron and Fischer in order to use the process of determining propagation path for the purpose of determining whether it is possible to communicate with tags based on certain environmental factors.

Claim 37: Duron, Fischer and Chieu teach wherein a plurality of radio wave propagation paths present between each RFID tag and each interrogator are distinguished based on a combination of a local oscillating frequency for generating a response subcarrier of each RFID tag, a response timing, a frequency of an interrogation radio wave outputted from the interrogator and timing of generating the interrogation radio wave (Chieu Col 10 lines 1-15,40-60 e.g. changing frequencies and band channels).

14. Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duron in view of Fischer and further in view of Bauer (US Patent #7084769).

Claim 38: Duron and Fischer teaches the transmission of power base on signal strength and further discloses the tag overcoming frequency barriers of a device based on the environment by using components used in Claim 21 (e.g. 222 impedance adder) and modulation of a plurality of frequencies with a tag possessing a phase divider but do not specifically disclose an interrogator having two or more antennas dedicated for reception or used for transmission and reception, and based on a difference in phase between receiving antennas in a signal for response thereto, maximum likelihood determination of a position of the RFID tag is performed.

Bauer teaches an interrogator having two or more antennas dedicated for reception or used for transmission and reception, and based on a difference in phase between receiving antennas in a signal for response (Col 2 lines 32-37; Col 7 lines 58-67).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of invention taught by Bauer within the system of Duron and Fischer in order to use a two dimensional antenna in difference of phases for the purpose of efficiently exchanging signals from a multiplicity of tags.

Claim 39: Duron, Fischer and Bauer teach wherein in order to enable a three-dimensional RFID tag position determination, an interrogation device having four or more antennas dedicated for reception or used for transmission and reception is used to eliminate a commonly measured distance offset by obtaining a group delay time in each radio wave propagation path based on four or more sets of frequency responses measured for the two or more frequencies, and obtaining a difference in delay time with reference to at least one of the sets (Col 31 lines 15-30).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. Whitesmith teaches an RFID communication system using a control sensing unit with oscillation control.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RUFUS POINT whose telephone number is (571)270-7510. The examiner can normally be reached on Mon-Fri 800-1700EST Every Other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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